

APPENDIX 4

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

Environmental Assessment Number OR-086-00-01

The proposed treatment area is located within the Coast Creek drainage, a tributary of the Willamina Creek watershed, which is a tributary to the South Yamhill River. A watershed analysis was completed in May, 1998 (i.e., *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis*).

The past, present, and reasonably foreseeable future actions within the Willamina Creek watershed are listed below, and are followed by a discussion of the character of the watershed and affects of those actions on the relevant resources within the watershed. The cumulative effects of the past, present, and reasonably foreseeable actions will be analyzed in Chapter 3 of the Environmental Assessment.

Actions:

Past: *high rate of logging since the turn of the century with associated actions including railroad logging, splash dams, snag felling, roads, milling, and blasting rock/removal of large wood from stream channels * dispersed recreational use including hunting, fishing, rockhounding, sightseeing and motorcycle riding * minor amount of mineral extraction (primarily gravel) * homestead settlement * agriculture * gathering of special forest products such as landscape transplants, floral greenery (i.e., mosses, ferns, salal, and tree boughs), Christmas trees, seed cones, berries, mushrooms, western red cedar shake bolts, and firewood * municipal and domestic uses of water including water diversions * some vandalism and refuse dumping * fire, including prescribed fire (wildfire intervals ranging from 150 to 350 years) * storm events (flooding in 1996 resulted in numerous slides and failures) * release of hatchery salmonids: 1/ coho salmon, not native above Willamette Falls, were first introduced in the 1920's, again throughout the basin in the 1950's through the mid 1970's, and again in the 1980's with emphasis on the Yamhill system; 2/ steelhead from outside the upper Willamette ESU (Evolutionarily Significant Unit) have also been stocked; winter steelhead were introduced beginning in 1962 and the stocking effort of adults, smolts and presmolts continued until 1982; hatch box releases of steelhead fry occurred each year from 1982 to 1990; and 3/ releases of warmwater game fish by ODFW (Oregon Department of Fish and Wildlife) in the Yamhill River include bullhead and channel catfish, largemouth bass, and crappie.

Present: * logging with harvest rates below historic levels * increased road density (greater than 5.5 miles per square mile) due primarily to the current construction of roads by private industry to support logging operations planned for the next several years * dispersed recreational use including hunting, fishing, and OHV (off-highway vehicle) * urban and rural development, including supporting services, gradually increasing as more of the workforce commutes to Portland Metro Area * agriculture * manufacturing * minor amount of gathering of special forest products such as mushrooms, firewood,

mosses and other floral greenery, and landscape vegetation * 176 active water right permits * vandalism, resource thefts, and garbage dumping * storm events * some influence from warmwater game fish releases by ODFW in the Yamhill River, and past stocking of hatchery salmonids * ongoing instream enhancement and riparian planting by BLM on a five mile segment of Willamina Creek.

Reasonably Foreseeable: * logging on private land with the assumption of much of the merchantable-aged timber will be harvested in accordance with the Oregon Forest Practices Act within the next ten years and the resultant clearcuts will then be managed (thinning, spraying herbicides, etc.) * increased road density proportional to residential development and timber harvest rates * logging and other silvicultural treatments on federal land at current levels (approximately one timber sale per year) * increased recreational use proportional to increased population in the vicinity * no new mineral extraction, except gravel, due to the low quality and/or quantity of minerals * continued rural and urban development * gathering of special forest products such as mosses, mushrooms, firewood, and landscape vegetation at or above current levels * increased vandalism, resource thefts, and refuse dumping proportional to increased population in the vicinity * implementation of some watershed restoration (e.g., stream enhancement projects, road decommissioning on federal lands) projects by the BLM (Bureau of Land Management), FS (Forest Service), Yamhill Basin Watershed Council, private landowners, Grand Ronde Confederated Tribes, or others * storm events * control measures applied on exotic plants and noxious weeds along roadside and in regeneration areas * some influence from warmwater game fish releases by ODFW in the Yamhill River, and past stocking of hatchery salmonids.

Introduction:

The Willamina Creek watershed is a 53,680 acre watershed located north of the city of Willamina, Oregon, emptying into South Yamhill River, a tributary of the Willamette River.

The upper portion of the Willamina Creek drainage has gentle to very steep slopes and gently sloping to moderately sloping ridgetops. The lower watershed area is low-lying hills and gently sloping bottom lands. There is little naturally occurring open, non-forested land within the drainage. The open land that does exist tends to be associated with human habitations along the lower reaches of Willamina Creek. The forested lands of the watershed is comprised mostly of conifers (67%), and some hardwoods (33%), of various age classes with 83% of the timber less than 70 years of age. Elevations vary from a low of 210 feet at the confluence of Willamina Creek with South Yamhill River to 3081 feet at the top of Bald Mountain on the northern edge of the watershed. There are several distinct subwatersheds and many smaller unnamed subwatershed within the drainage, totaling approximately 296 miles of stream course. Precipitation amounts within the watershed vary widely, due to location and elevation. Most precipitation falls as rain, although substantial snowfall can occur in the higher elevations.

About 38% of the watershed is owned by large private industrial wood products companies; 30% is administered by the BLM; 25% is owned by private individuals or smaller companies, of which, many manage their land for timber production; 4% is owned by the Grand Ronde Confederated Tribes; 2% is administered by the FS; and 1% is managed by the state and local governments. The primary land use

within the watershed is timber production, and has been for more than a century. Logging these highly dissected lands has resulted in a vast road network with the average density being 5.5 miles of road per square mile of land.

Condition of Relevant Resources:

The 1998 BLM *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis* contains a detailed discussion of the existing condition (reflective of past and present actions) and reference condition of the Willamina Creek Watershed. The following resource condition information is taken in part from the watershed analysis with the addition of a discussion of the predicted trend in the condition of the relevant resources within the watershed in consideration of the reasonably foreseeable actions. This discussion is based primarily upon the professional opinion of the interdisciplinary team.

Vegetation: Prior to the Nestucca fire of 1850, uplands were essentially a continuous block of forest over 200 years old interspersed with younger timber, while in the lower reaches of the watershed an oak-grassland community existed. As a result of past and present actions, conifers now dominate the upper reaches of the watershed, with the middle reaches predominately a mix of hardwoods and conifers, and the lower reaches having little forested land.

The Willamina Creek Watershed is located within the western hemlock zone as described by Franklin and Dyrness (1973). Subclimax Douglas-fir dominates most stands in the watershed. Over time, and in the absence of major disturbance, old-growth communities (400 to 600 years of age) are expected to develop on much of the federal land ownership. In addition to Douglas-fir, western hemlock and western redcedar should be major trees species found in such old-growth forest. Grand fir occurs as a minor stand component in some lower elevation conifer stands.

A common situation within the watershed is the development of dense, even-aged stands of Douglas-fir. This pattern is encouraged by extensive planting of this species following timber harvest and intensively managing competing vegetation along with stand composition and density in the young developing plantations.

Several plant associations similar to those described by Hemstrom and Logan (1986) are common in this watershed, including western hemlock/salal, western hemlock/vine maple-salal, western hemlock/swordfern, western hemlock/vine maple/swordfern, and western hemlock/dwarf Oregon grape-salal.

Considering all ownerships, less than 1% of the watershed is in the old-growth condition¹, and only 17%

¹ Stands in the old-growth condition are characterized by large-diameter overstory Douglas-fir trees, dying live trees, snags, abundant coarse woody debris on the forest floor, replacement of Douglas-fir by shade tolerant climax species such as western hemlock or western redcedar in canopy gaps. Stands often have multi-layered canopies.

is in the mature stand condition². The closed sapling³, open sapling⁴, and early grass-forb⁵ conditions dominate the watershed, with 75% of the area included in these conditions. Non-forest lands comprise 8% of the watershed. Considering federal ownership within the Willamina Creek watershed, approximately 40% of the federal land (6,174 acres) is over 80 years old which is well above the 15% threshold for providing late-successional forest habitat where little remains as described within the Northwest Forest Plan, C-44 (Project Record, Document 36).

The distribution of stand conditions within the watershed is largely influenced by the private lands, since 63% of the land is in private ownership. About 91% of the private lands are in the closed sapling, open sapling, early grass-forb and non-forest condition. The majority (92%) of BLM land is in the mature, closed sapling or open sapling condition with most of the stands being 50 to 60 years old. Just under half (44%) of the area of BLM land is located in Riparian Reserves.

Laminated root rot caused by the fungus *Phellinus weirii* is widespread (approximately 10% of the area in Douglas-fir stands is thought to be in disease centers) and has a major influence on the character of many Douglas-fir stands in the watershed. Disease centers are characterized by windthrown, standing dead, and live symptomatic trees, along with a relatively well-developed shrub layer. Disease centers normally range from less than one acre to several acres. Douglas-fir timber volume production in disease centers is typically about one-half of that of healthy stand production. Trees infected with the *Phellinus weirii* root rot also are subject to attack by the Douglas-fir beetle (*Dendroctonus pseudotsugae*), which can cause additional mortality and increase openings in stands. Tree species vary in susceptibility to *Phellinus weirii*. Douglas-fir and grand fir are highly susceptible. Western hemlock is considered intermediately susceptible, and western red cedar is thought to be resistant to the disease. All hardwoods species are immune.

Most of the riparian areas in the watershed are dominated by red alder. Occasionally, large conifers are found in certain locations (typically higher-elevation forested areas), but seldom in desired numbers. Most red alder-dominated riparian stands are 50 to 60 years old. The stream buffers on private lands are typically on third-order and larger streams, and are quite narrow (usually in width of one normal tree spacing). Many of the buffers on private lands have been windthrown.

² The mature condition begins at about age 75, the average diameter of the conifer trees is 21 inches or larger.

³ The closed sapling stand condition is characterized by a closed canopy dominated by Douglas-fir in a single layer and sparse ground cover. This stand condition can last from about age 35 to 75.

⁴ The open sapling stand condition occurs from about stand age 15 to 35.

⁵ The early grass-forb condition occurs after regeneration timber harvest and slash disposal and can last from age 0 to 10.

Past logging practices and associated road building has allowed an influx of noxious/exotic weeds into disturbed areas. However, the location and extent of exotic plant and noxious weed infestations are not well-known within the watershed at this time. A recent weed survey of BLM land (Oregon State University Weed Survey Report, June, 1997), found blackberry, Scotch broom, and Canadian thistle noticeably more abundant than other weed species and that dense weed population were dependent upon locations with ample sunlight.

The trend on private land is to harvest stands while they are still well within the closed sapling stage, maintaining primarily Douglas-fir plantations. Past and present forest management activities (primarily timber harvest and road construction) have generally resulted in few legacies (i.e., larger green trees, snags, and coarse woody debris) being retained from the previous stands, degraded riparian habitat, and the spread of exotic plants and noxious weeds. Future management actions on federal land will be in accordance with the April, 1994 *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, which contains management direction to provide for legacies, restore and maintain the ecological health of riparian ecosystems, and contain and/or reduce noxious weed infestations. From a larger landscape perspective, because nearly 32% of the Willamina Creek watershed is owned by the BLM or FS, restoration activities implemented on federal land within portions of the watershed have a greater potential to beneficially impact ecosystem function, than in several of the adjacent watersheds which contain a smaller proportion of federal ownership such as Deer or Panther Creek.

There is not much scientific evidence known for the condition and trends of lichens, liverworts, mushrooms, and mosses (survey and manage species) in the Willamina Creek watershed. Since past actions have affected habitat for these species, it is assumed that populations have also declined. Presently, botanists are finding numerous special attention plant species in this watershed (1997-2000). Further monitoring studies on these species should shed light on the biological health of the populations.

Soil Resource: The soils within the Willamina Creek watershed are mostly in the Hembre, Astoria and Klickitat soil series. These are deep, well-drained soils formed over basalt and mixed sedimentary rock. Soil textures are generally silt loam over silty clay loam. The terrain is composed of rolling hills with steep slopes leading down to valley bottoms and streams. The dominant erosion process in the watershed is mass wasting and surface erosion. Mass wasting is typically debris slides or flows that most often occur on steep slopes. Surface erosion occurs where bare soils have been exposed by disturbances such as logging, road or trail construction, or land clearing. Flooding in February, 1996, resulted in numerous slides and failures in the Willamina Creek watershed.

The current condition for erosion processes varies from the reference condition in the rate and timing of erosion. Under reference conditions there were large increases in erosion rates associated with major disturbances such as fire and large storms, after which erosion rates dropped to relatively low levels until the next major disturbance. Removal of vegetation combined with compaction and displacement of soil

from logging, road construction, agriculture, etc., have created an increase in erosion rates that has been going on for a much longer time than it would under natural conditions. In addition, the type of material delivered to stream channels and riparian areas from landslides has changed. Landslides were a major source of large woody debris in historical times, when there were large areas of older timber in the watershed. With the younger timber that dominates the watershed today, there is little or no large wood input to the channels from landslides which is reflected in the lack of large wood and structure in these channels.

Future management actions on federal land will be in accordance with approved land management plans which contain management direction to maintain and restore the sediment regime under which aquatic ecosystems evolved. Since nearly 32% of the watershed is owned by the BLM and FS, any beneficial action taken on federal land will have some beneficial impact on the sediment regime within the watershed, although the checkerboard land ownership pattern somewhat limits this benefit within the mid-valley area.

Water: The major beneficial uses of water in the Willamette Basin are for domestic and municipal consumption, anadromous fish passage, irrigation, wildlife and hunting, salmonid fish spawning, resident fish and aquatic life, livestock watering, industrial/manufacturing, fishing, boating, water contact recreation, aesthetic quality, and hydropower. The Oregon DEQ (Department of Environmental Quality), Water Resources Division, lists 176 active water right permits within the watershed. The City of Willamina has water rights for surface water in the analysis area and there are numerous water diversions for domestic use, located primarily in the lower one-half of the watershed. Willamina Creek was identified as water quality limited by Oregon DEQ in 1995 with respect to phosphorus and fecal coliform. The BLM 1998 *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis* identified water temperature, landslides, streambank erosion, low flows, and stream channels containing little or no complexity as likely water quality problems within the Willamina Creek watershed.

Past and present actions, primarily timber harvest, road construction, and residential development, have influenced the hydrologic processes of the watershed to the point that portions of the stream channels are at risk or not functioning properly. Future management actions on federal land will be in accordance with approved land management plans which contain management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Since nearly 32% of the watershed is owned by the BLM and FS, any beneficial action taken on federal land will have some beneficial impact on water quality within the watershed, although the checkerboard land ownership pattern somewhat limits this benefit within the mid-valley area.

Fisheries: Steelhead are the only anadromous salmonid native to the Willamina Creek drainage. On May 25, 1999, National Marine Fisheries Service listed the upper Willamette steelhead ESU as threatened under the ESA (Endangered Species Act), which includes the Willamina Creek drainage. On March 17, 2000, the final rule designating critical habitat for upper Willamette steelhead and upper Willamette chinook salmon went into effect. Designated critical habitat for both species includes the Willamina Creek drainage to include all river reaches accessible to listed salmon or steelhead within the range of

the ESU. Critical habitat consists of the water, substrate, and adjacent riparian zone. Numbers of upper Willamette steelhead spawners have had a steep and continuing decline since 1988. The decline has been attributed mainly to destruction and modification of habitat, over-utilization for recreational purposes, and natural and human-made factors (Federal Register: March 10, 1998, Vol. 63, No. 46, Proposed Rules, pp. 11797-11809). Native steelhead runs were thought to have been extirpated from the Yamhill River system by 1958 due to dams on the system (Willis *et al.*, 1960). However, the presence of late-run spawners in Willamina Creek supports the theory that native steelhead may still be present (S. Mamoyac, ODFW, pers. comm.). Upper Willamette chinook salmon, also proposed as threatened under the ESA, are native to the upper Willamette drainage, but were not known to occur in Willamina Creek, currently or historically. Coho salmon are present due to hatchery releases but are not native above Willamette Falls. Cutthroat trout are present in the Willamina Creek drainage. Though the actual distribution of cutthroat in this drainage is not known, second order or larger streams are expected to have cutthroat present for at least a portion of the year.

Non-native warmwater fishes are present in lower Willamina Creek. ODFW has released bullhead and channel catfish, largemouth bass, and crappie in the Yamhill River (Wevers *et al* 1992). Other warmwater fish species present include smallmouth bass, bluegill, pumpkinseed, warmouth and yellow perch.

The Oregon chub, listed under the ESA as endangered, is present in the Willamette River Basin but very few populations exists outside of the Finley Wildlife Refuge (Wevers *et al* 1992), and Willamina Creek does not contain any habitat for this species.

The Oregon chub, listed under the ESA as endangered, is present in the Willamette River Basin but its only known population at this time is inside the Finley Wildlife Refuge (Wevers *et al* 1992).

Logging and farming practices of the past century have drastically altered riparian areas in these watersheds. On the lower reaches much of the vegetation that buffered streams and provided habitat has been removed and as a result, water quality and quantity has been adversely impacted. The reduction of water quality in the streams has impacted wildlife and fisheries. On the forested sections in the middle and upper reaches, old growth conifers have been mostly eliminated, removing an important fisheries habitat component.

The population of upper Willamette steelhead has been declining for the past 10 years which lead to the proposal for listing under the ESA. Under the current conditions, the loss of habitat contributing to the downward trend is unlikely to be reversed since lack of adequate large woody debris for structure will continue to be a problem over most of the watersheds due to the lack of large conifers on private lands for recruitment to the channel. Since other fish species, both resident and anadromous, have habitat requirements similar to those of steelhead, it is likely that they are also experiencing a downward trend.

Future management actions on federal land will be in accordance with approved land management plans which contain management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Though only 32% of the Willamina Creek watershed is under

federal ownership (30% BLM and 2% FS), beneficial actions on federal land would have positive impacts on the fisheries resources within the watershed. The overall direction on federal lands and the current restoration efforts on Willamina Creek on approximately five miles of BLM land should maintain and help restore water quality and aquatic habitat in portions of Willamina Creek and thus slow or reverse the downward trend for fish species in the watershed.

Wildlife: The Willamina Creek watershed landscape is dominated by highly fragmented timber stands, mostly 30 to 50 years old. What little mature forest exists, occurs mainly on federal land, at higher elevations or along creeks where land-clearing fires of the past were not as intense. There is very little mature interior forest habitat and virtually no old-growth timber (less than 1%) left within the watershed. As a result of forest fragmentation and the general landscape pattern, the ability of some species to disperse, within this watershed or move across the larger landscape, has been greatly limited. Many forested riparian corridors have been harvested or reduced to thin strips of red alder, and the contiguous blocks of interior forest habitat fragmented or totally eliminated by clearcutting. For some species, especially those dependent upon later seral stage habitat, such as the spotted owl, these factors and the resulting landscape pattern have resulted in dispersal problems and a high degree of regional isolation.

In general, past and present actions have resulted in little or no habitat for those species dependent upon later seral stage habitat including snags or coarse woody debris, large blocks of interior forested habitat or diverse, cool, shaded, riparian habitats within the watershed. Conversely, there is a great deal of habitat for those species which depend upon or utilize early seral stage habitats, smaller patches and the juxtaposition of differing habitat types. Overall, the in-stream habitat conditions within the watershed are poor. Future management actions on federal land will be in accordance with approved land management plans which contain management direction to provide for healthy forest ecosystems with habitat that will support populations of native species and includes protection for riparian areas and waters. Since nearly 32% of the watershed is owned by the BLM and FS, any beneficial action taken on federal land will have a notable, long-term beneficial impact on late-successional wildlife species and their habitats within the watershed, although the checkerboard land ownership pattern somewhat limits this benefit within the mid-valley area.

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